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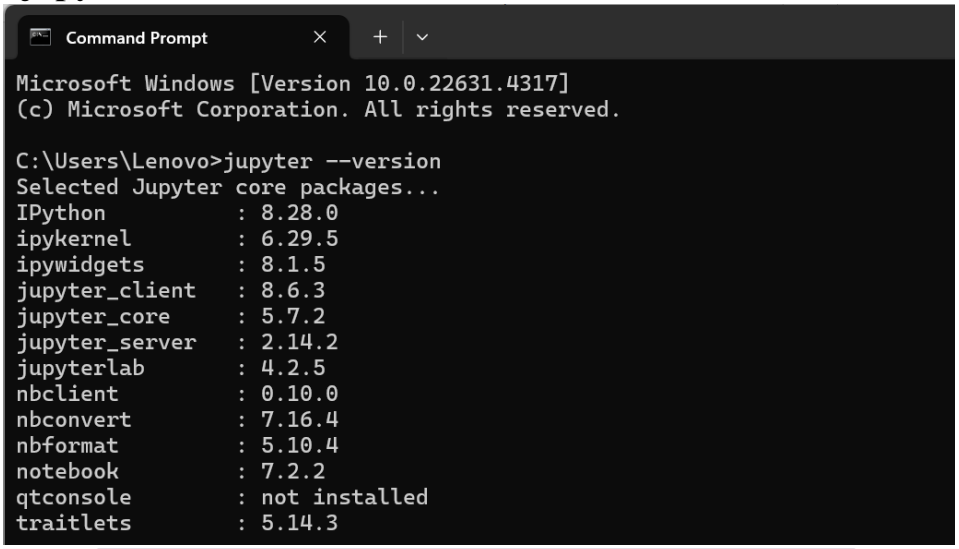
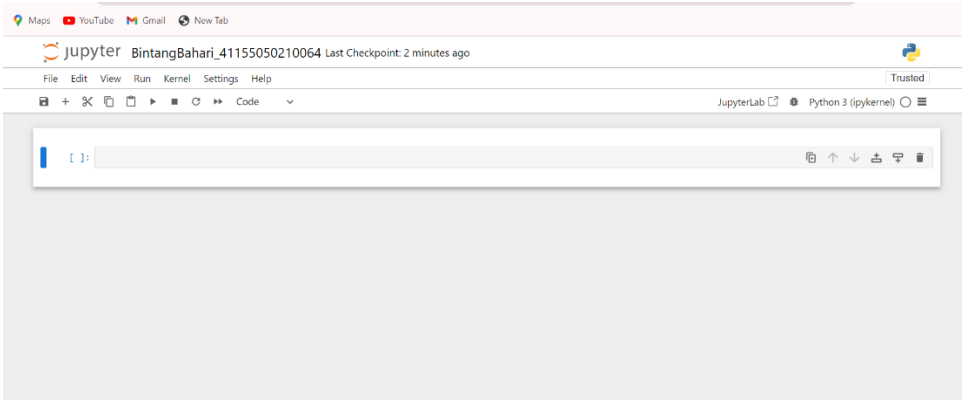
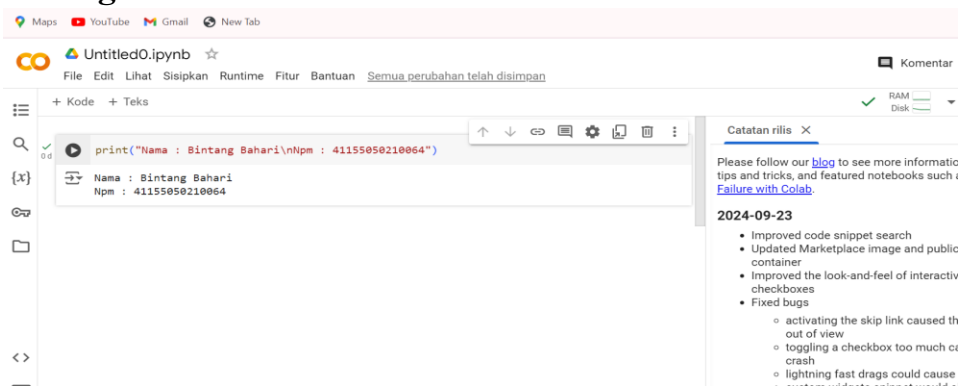
Tugas 1 Machine Learning

1. **Buat screenshot sebagai jawaban nomor 1 di Tugas Pertemuan 1! *jupyter Notebook**

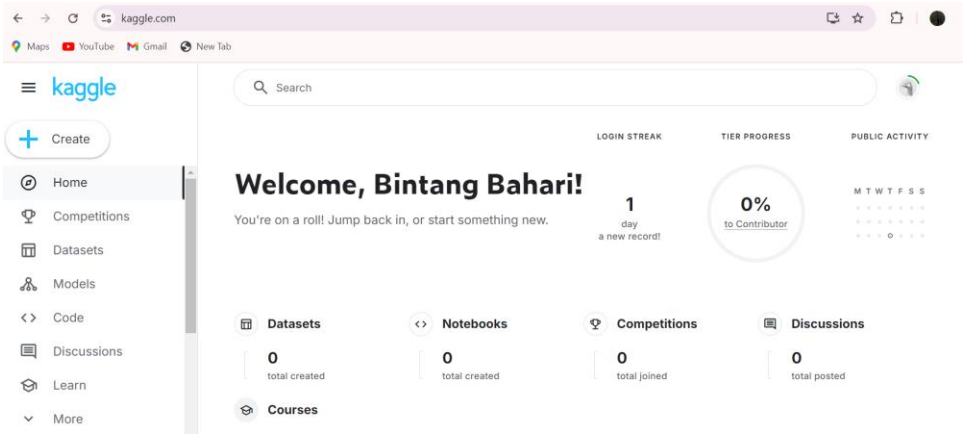




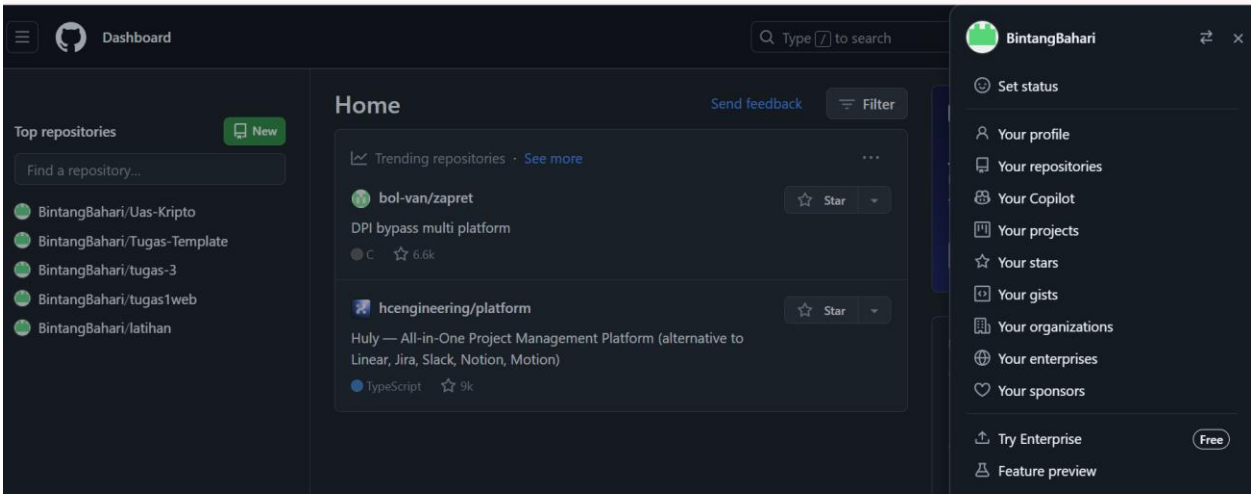
2.Google Collab



3.Buatlah akun Kaggle

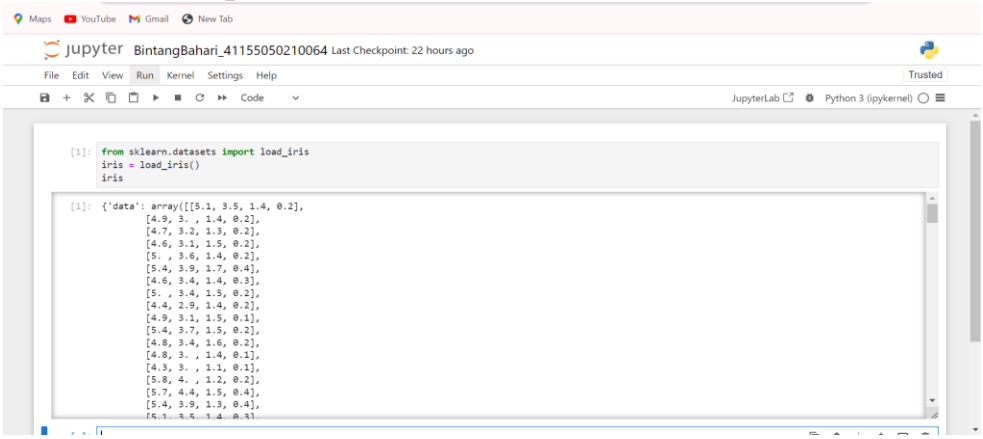


4.akun github



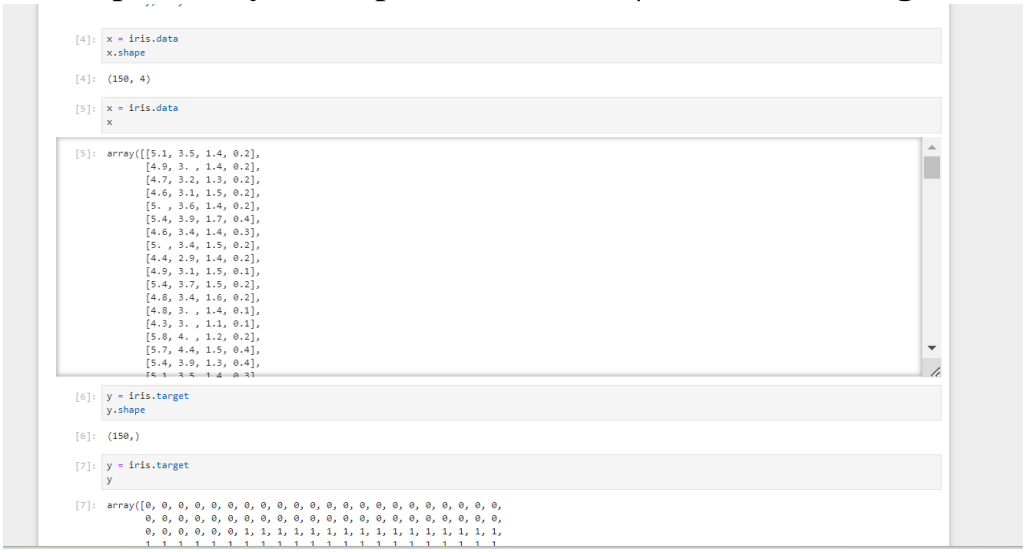
5.. Lakukan praktek dari https://youtu.be/mSO2hJln0OY?feature=shared . Praktek tersebut yaitu:

5.1. Load sample dataset



5.2. Metadata | Deskripsi dari sample dataset

5.3. Explanatory & Response Variables | Features & Target



5.4. Feature & Target Names

```
       2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2])
```

[8]:
```
feature_names = iris.feature_names
feature_names
```

[8]:
```
['sepal length (cm)',
 'sepal width (cm)',
 'petal length (cm)',
 'petal width (cm)']
```

[9]:
```
feature_names = iris.target_names
feature_names
```

[9]:
```
array(['setosa', 'versicolor', 'virginica'], dtype='<U10')
```

[ ]:

5.5. Visualisasi Data

jupyter BintangBahari_41155050210064 Last Checkpoint: 23 hours ago

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Code JupyterLab

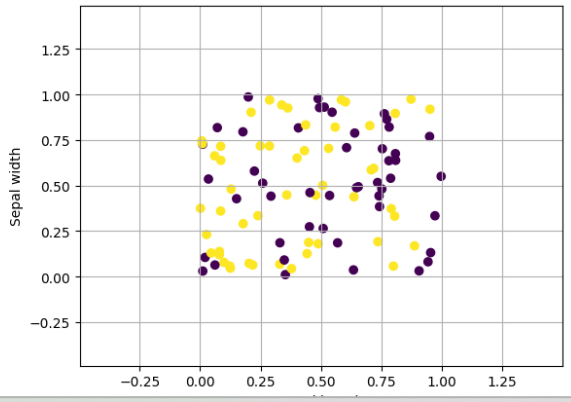
[19]:
```
import matplotlib.pyplot as plt

X = X[:, :2]

x_min, x_max = X[:, 0].min() - 0.5, X[:, 0].max() + 0.5
y_min, y_max = X[:, 1].min() - 0.5, X[:, 1].max() + 0.5

plt.scatter(X[:, 0], X[:, 1], c=y)
plt.xlabel('Sepal length')
plt.ylabel('Sepal width')

plt.xlim(x_min, x_max)
plt.ylim(y_min, y_max)
plt.grid(True)
plt.show()
```



5.6. Training Set & Testing Set

[24]:
```
from sklearn.model_selection import train_test_split

X_train, X_test, y_train, y_test = train_test_split(X,
                                                    y,
                                                    test_size=0.3,
                                                    random_state=1)

print(f'X train: {X_train.shape}')
print(f'X test: {X_test.shape}')
print(f'X train: {y_train.shape}')
print(f'X test: {y_test.shape}')
```

```
X train: (70, 2)
X test: (30, 2)
X train: (70,)
X test: (30,)
```

5.7. Load sample dataset sebagai Pandas Data Frame

[29]:
```
iris = load_iris(as_frame=True)

iris_feature_df = iris.data
iris_feature_df
```

[29]:

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)
0	5.1	3.5	1.4	0.2
1	4.9	3.0	1.4	0.2
2	4.7	3.2	1.3	0.2
3	4.6	3.1	1.5	0.2
4	5.0	3.6	1.4	0.2
...	...	...	...	...
145	6.7	3.0	5.2	2.3
146	6.3	2.5	5.0	1.9
147	6.5	3.0	5.2	2.0
148	6.2	3.4	5.4	2.3
149	5.9	3.0	5.1	1.8

150 rows × 4 columns

6.0. Lakukan praktek dari https://youtu.be/tiREcHrtDLo?feature=shared . Praktek tersebut yaitu:

6.1. Persiapan dataset | Loading & splitting dataset

[6]:
```
from sklearn.datasets import load_iris

iris = load_iris()

X = iris.data
y = iris.target
```

[7]:
```
from sklearn.model_selection import train_test_split

X_train, X_test, y_train, y_test = train_test_split(X,
                                                    y,
                                                    test_size=0.4,
                                                    random_state=1)
```

6.2. Training model Machine Learning

[12]:
```
from sklearn.neighbors import KNeighborsClassifier

model = KNeighborsClassifier(n_neighbors=3)
model.fit(X_train, y_train)
```

[12]:
```
KNeighborsClassifier
KNeighborsClassifier(n_neighbors=3)
```

6.3. Evaluasi model Machine Learning

```
[14]: from sklearn.metrics import accuracy_score

      y_pred = model.predict(X_test)
      acc = accuracy_score(y_test, y_pred)
      print(f'Accuracy: {acc}')

      Accuracy: 0.9833333333333333
```

6.4. Pemanfaatan trained model machine learning

```
[15]: data_baru = [[4, 6, 2, 2],
                  [2, 3, 3, 5]]

      preds = model.predict(data_baru)
      preds

[15]: array([0, 1])

[16]: pred_species = [str(iris.target_names[p])for p in preds]
      print(f'Hasil Prediksi: {pred_species}')

      Hasil Prediksi: ['setosa', 'versicolor']

[ ]:
```

6.5. Deploy model Machine Learning | Dumping dan Loading model

```
[18]: import joblib

      joblib.dump(model, 'iris_classifier_knn.joblib')

[18]: ['iris_classifier_knn.joblib']

[19]: production_model = joblib.load('iris_classifier_knn.joblib')

[ ]:
```

7.0. Lakukan praktek dari https://youtu.be/smNnhEd26Ek?feature=shared . Praktek tersebut yaitu:

7.1. Persiapan sample dataset

[2]:
```
import numpy as np
from sklearn import preprocessing

sample_data = np.array([[2.1, -1.9, 5.5],
                        [-1.5, 2.4, 3.5],
                        [0.5, -7.9, 5.6],
                        [5.9, 2.3, -5.8]])
sample_data
```

[2]:
```
array([[ 2.1, -1.9,  5.5],
       [-1.5,  2.4,  3.5],
       [ 0.5, -7.9,  5.6],
       [ 5.9,  2.3, -5.8]])
```

[3]:
```
sample_data.shape
```

[3]:
```
(4, 3)
```

7.2. Teknik data preprocessing 1: binarisation

[4]:
```
preprocessor = preprocessing.Binarizer(threshold=0.5)
binarised_data = preprocessor.transform(sample_data)
binarised_data
```

[4]:
```
array([[1., 0., 1.],
       [0., 1., 1.],
       [0., 0., 1.],
       [1., 1., 0.]])
```

7.3. Teknik data preprocessing 2: scaling

```
[5]: sample_data
```

```
[5]: array([[ 2.1, -1.9,  5.5],
            [-1.5,  2.4,  3.5],
            [ 0.5, -7.9,  5.6],
            [ 5.9,  2.3, -5.8]])
```

```
[8]: preprocessor = preprocessing.MinMaxScaler(feature_range=(0,1))
     preprocessor.fit(sample_data)
     scaled_data = preprocessor.transform(sample_data)
     scaled_data
```

```
[8]: array([[0.48648649, 0.58252427, 0.99122807],
            [0.        , 1.        , 0.81578947],
            [0.27027027, 0.        , 1.        ],
            [1.        , 0.99029126, 0.        ]])
```

```
[9]: scaled_data = preprocessor.fit_transform(sample_data)
     scaled_data
```

```
[9]: array([[0.48648649, 0.58252427, 0.99122807],
            [0.        , 1.        , 0.81578947],
            [0.27027027, 0.        , 1.        ],
            [1.        , 0.99029126, 0.        ]])
```

```
[ ]:
```

7.4. Teknik data preprocessing 3: normalisation

```
[10]: sample_data
```

```
[10]: array([[ 2.1, -1.9,  5.5],
             [-1.5,  2.4,  3.5],
             [ 0.5, -7.9,  5.6],
             [ 5.9,  2.3, -5.8]])
```

```
[12]: li_normalised_data = preprocessing.normalize(sample_data, norm='l1')
      li_normalised_data
```

```
[12]: array([[ 0.22105263, -0.2       ,  0.57894737],
             [-0.2027027 ,  0.32432432,  0.47297297],
             [ 0.03571429, -0.56428571,  0.4       ],
             [ 0.42142857,  0.16428571, -0.41428571]])
```

```
[13]: l2_normalised_data = preprocessing.normalize(sample_data, norm='l2')
      l2_normalised_data
```

```
[13]: array([[ 0.33946114, -0.30713151,  0.88906489],
             [-0.33325106,  0.53320169,  0.7775858 ],
             [ 0.05156558, -0.81473612,  0.57753446],
             [ 0.68706914,  0.26784051, -0.6754239 ]])
```

```
[ ]:
```